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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,244

04/09/2004

Kosei Goto

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EXAMINER

McCLOUD, RENATA D

ART UNIT

PAPER NUMBER

2837

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/28/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/821,244

Applicant(s)

GOTO ET AL.

Examiner

Renata McCloud

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/05/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 12-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/9/04, 9/15/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the inventions in the reply filed on 10/05/06 is acknowledged. The traversal is on the ground(s) that the office action has not set forth how the grouped claims meet the criteria for a prima facie case of independence and/or distinctness. This is not found persuasive because the office action disclosed how the groups of claims have different classifications and would require different searches, which would be burdensome.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

(a) Regarding claims 3-10, the phrase "such that" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

(b) Claims 5,6,8: It is unclear what is at a maximum and what decreases

Art Unit: 2837

(c) The term "relatively" in claims 7 and 9 is a relative term which renders the claim indefinite. The term "relatively" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

(d) The term "gradually" in claim 8 is a relative term which renders the claim indefinite. The term "gradually" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

(e) Claim 10: The claim does not make any sense.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1,11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hallidy (US 6528967).

Claim 1: A motor control device comprising rectifying devices (124) and switching devices (106) for three phases, which are connected between a DC power source (102) and armature coils of an AC motor (108) connected to an engine (col. 2:8-10), said motor control device having the inverter function of converting a DC power from said DC power source into an AC power (col. 6:66-7:5; col. 7:30-35) and supplying the AC power to said armature coils, and the converter function of converting an AC power generated by said AC motor into a DC power and supplying the DC power to said DC power source (col. 3:34-38), wherein rectangular-wave

Art Unit: 2837

driving control of applying rectangular wave voltages to said armature coils of said AC motor is performed when said AC motor is operated for power running (col. 6:66-7:5; col. 7:30-35; col. 10:50-61), and synchronous rectification control for making synchronous rectification of the AC power generated by said AC motor is performed when said AC motor is operated for electricity generation (col. 7:57-60).

Claim 11: rectangular wave driving is performed at the start of operation of the engine (col. 1:25-30, 12:49-65) and after a period of time, generation control is performed (col. 11:1-13)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Reichard et al (US 4988939)

Claim 2: Hallidy teaches the limitations of claim 1. Referring to claim 2, Hallidy teaches not allowing a current to go above a maximum value during motoring/rectangular wave driving (col. 1:64-7). Hallidy does not teach in the rectangular-wave driving control, currents flowing through said switching devices are held below maximum allowable current values of said switching devices. Reichard et al teach when the rectangular wave voltages are applied to said armature coils in the rectangular-wave driving control, currents flowing through said switching devices are held below maximum allowable current values of said switching devices (col. 22:24-39). IT would have been obvious to one having ordinary skill in the art at the time the invention

Art Unit: 2837

was made to modify the invention of Hallidy to limit the current as taught by Reichard et al in order to prevent overshoot.

9. Claims 3-4 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Reichard et al (US 4988939) as applied to claim 2 above, and further in view of Hahn et al (US 6967459).

Claim 3: Hallidy and Reichard et al teach the limitations of claim 2. Referring to claim 3, they do not teach wherein pulse widths of the rectangular wave voltages applied to said armature coils are set such that the currents flowing through said switching devices are held below the maximum allowable current values of said switching devices. Hahn et al teach pulse widths of the rectangular wave voltages applied to said armature coils are set such that the currents flowing through said switching devices are held below the maximum allowable current values of said switching devices (col. 15:23-29; col. 21:11-14). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Hallidy and Reichard et al to control the current as taught by Hahn et al in order to prevent overcurrent.

Claim 4: Hallidy and Reichard et al teach the limitations of claim 2. Referring to claim 4, they do not teach wherein resistance values of said armature coils are set such that the currents flowing through said switching devices are held below the maximum allowable current values of said switching devices. Hahn et al teach resistance values of said armature coils are set such that the currents flowing through said switching devices are held below the maximum allowable current values of said switching devices (col. 4:36-40, col. 12:51-60, 14:44-58). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify

Art Unit: 2837

the invention of Hallidy and Reichard et al to control the current as taught by Hahn et al in order to prevent overcurrent.

10. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Yoshikawa et al (US 5493188).

Claim 5: Hallidy teaches the limitations of claim 1. Referring to claim 5, Hallidy does not teach the pulse widths are equal to a half cycle of an electrical angle at a maximum and decreases as the speed decreases. Yoshikawa et al teach the pulse widths are equal to a half cycle of an electrical angle at a maximum and decreases as the speed decreases (col. 9:1-30). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Hallidy to control the pulse widths as taught by Yoshikawa et al in order to control the torque.

11. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Doyama et al (US 6232730).

Claim 6: Hallidy teaches the limitations of claim 1. Referring to claim 6, Hallidy does not teach the pulse widths are equal to a half cycle of an electrical angle at a maximum and decreases as a voltage decreases. Doyama et al teach the pulse widths are equal to a half cycle of an electrical angle at a maximum and decreases as a voltage decreases (col. 13:34-45). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Hallidy to control the pulse widths as taught by Doyama et al in order to allow the electrical angle follow the mechanical angle thereby realizing improved rotation control.

Art Unit: 2837

12. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Doyama et al (US 6232730) as applied to claim 6 above, and further in view of Hahn et al (US 6967459).

Claim 7: Hallidy and Doyama et al teach the limitations of claim 6. Referring to claim 7, they do not teach the currents flowing through the switches are held below a maximum current. Hahn et al teach the currents flowing through the switches are held below a maximum current (col. 15:23-29; col. 21:11-14).). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Hallidy and Doyama et al to control the current as taught by Hahn et al in order to prevent overcurrent.

13. Claims 8,9 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallidy (US 6528967) in view of Gotou (US 6172474).

Claim 8: Hallidy teaches the limitations of claim 1. Referring to claim 8, Hallidy does not teach the pulse widths decreases as the temperature rises. Gotou teaches the pulse widths decrease as the temperature rises (col. 20:36-59, col. 40:1-34). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Hallidy to control the pulse widths as taught by Gotou in order to prevent breakdown of the switches.

Claim 9: Hallidy and Gotou teach the limitations of claim 8. Referring to claim 9, Gotou teaches the currents through the switches are held below a threshold temperature (col. 20:59-21:28, 23:3-29, 30:8-30)

Art Unit: 2837

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They disclose bi-directional inverters/converter and battery chargers.

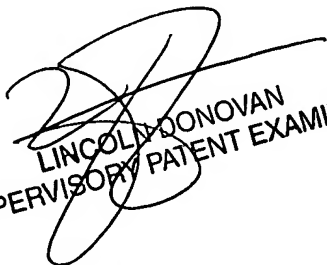
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 5:30 am - 2pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Renata McCloud
Examiner
Art Unit 2837

rdm


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